

**REMARKS/ARGUMENTS**

Claims 21-57 are pending in this application.

In the Office Action dated May 1, 2008, the Examiner rejected Claims 21, 22, 27-30, 36, 37, 42-44, 51, 52, 56, and 57 under 35 U.S.C. § 102(b) as being anticipated by Lazzari et al. (U.S. 5,465,302), and Claims 23-26, 31-35, 38-41, 45-50, and 53-55 under 35 U.S.C. 103(a) as being unpatentable over Lazzari et al. in view of Aoki et al. (U.S. 6,130,949).

Applicant respectfully traverses the rejections of Claims 21-57.

Applicant's Claim 21 recites:

A method for detecting a target sound, comprising the steps of:  
inputting sounds output from a sound source into plural microphones;  
detecting a phase of a cross-spectrum between sound signals input into the plural microphones;  
**detecting an inclination of the phase of the cross-spectrum with respect to a frequency due to respective distances from the sound source to the plural microphones; and**  
based on the inclination, determining whether the sound input into the plural microphones includes the target sound. (emphasis added)

Applicant's Claims 29, 36, 44, 52, 56, and 57 recite features that are similar to the features recited in Applicant's Claim 21, including the above emphasized features.

With the unique combination and arrangement of method steps and features recited in Applicant's Claim 21, including the feature of "detecting an inclination of the phase of the cross-spectrum with respect to a frequency due to respective distances from the sound source to the plural microphones," Applicant has been able to provide the construction of a sound reception system including plural mountable microphones and which is highly resistant to environmental fluctuations (see, for example, the first full paragraph on page 3 of the specification).

In Section No. 2 on page 2 of the outstanding Office Action, the Examiner alleged that Lazzari et al. teaches each of the features recited in Applicant's Claims 21, 29, 36, 44, 52, 56, and 57, including the feature of "detecting an inclination of the phase of the cross-spectrum with respect to a frequency."

Applicant respectfully disagrees.

Lazzari et al. measures the delay  $\delta$  between the sound signals, and when the detection index  $d(t)$  exceeds a predefined threshold, for example  $\delta_d=0.7$ , it is determined that the target sound is detected. See, for example, column 8, lines 4-31 of Lazzari et al. However, the delay  $\delta$  of Lazzari et al. is very different from an inclination of a phase of a cross-spectrum with respect to a frequency. That is, the Examiner has failed to explain how the delay  $\delta$  of Lazzari et al. corresponds to an inclination of a phase of a cross-spectrum with respect to a frequency of the presently claimed invention since the method and apparatus of Lazzari et al. only detects when delay  $\delta$  exceeds a predetermined threshold.

Accordingly, Applicant respectfully submits that Lazzari et al. fails to teach or suggest the feature of “detecting an inclination of the phase of the cross-spectrum with respect to a frequency due to respective distances from the sound source to the plural microphones” as recited in Applicant’s Claim 21, and similarly in Applicant’s Claims 29, 36, 44, 52, 56, and 57.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of Claims 21, 29, 36, 44, 52, 56, and 57 under 35 U.S.C. § 102(b) as being anticipated by Lazzari et al.

Applicant’s Claim 54 recites:

A voice recognition device for processing a speech sound output from a speech sound source and input into plural microphones, comprising:

a cross-spectrum phase detector for detecting a phase of a cross-spectrum between sound signals input into the plural microphones;

**an inclination detector for detecting an inclination of the phase of the cross-spectrum detected by the cross-spectrum phase detector with respect to a frequency;**

a delay time detector for detecting a delay time in the sound signals input into the plural microphones based on the inclination with respect to the frequency detected by the inclination detector;

a sound signal synthesizer for synthesizing the sound signals input into the plural microphones based on the delay time detected by the delay time detector;

a speech sound detector for detecting whether the synthesized sound signals synthesized by the sound signal synthesizer include the speech sound based on the inclination with respect to the frequency detected by the inclination detector; and

a voice recognition processor for performing voice recognition processing of the speech sound detected by the speech sound detector.

In Section No. 4 on page 4 of the outstanding Office Action, the Examiner alleged that the combination of Lazzari et al. and Aoki et al. teaches each of the features recited in Applicant's Claim 54, including the feature of "an inclination detector for detecting an inclination of the phase of the cross-spectrum detected by the cross-spectrum phase detector with respect to a frequency."

Applicant respectfully disagrees.

Neither Lazzari et al. nor Aoki et al. teaches the detection of an inclination of the phase of a cross-spectrum with respect to frequency. Lazzari et al. has been addressed above. Aoki et al. merely teaches detecting peaks in an audio signal, as shown in Figs. 4A and 4B, and described in column 3, line 58 to column 4, line 6 and column 6, line 49 to column 7, line 44 to determine a zone in which the sound source of the acoustic signal reaching the microphone is located. That is, Aoki et al. does not determine the inclination of a phase of the cross-spectrum with respect to a frequency because the apparatus of Aoki et al. only identifies the location of a peak in an acoustic signal among all of the microphones in the apparatus. Clearly, an inclination of the phase is very different from a peak in an acoustic signal.

Thus, the combination of Lazzari et al. and Aoki et al. fail to teach or suggest the feature of "an inclination detector for detecting an inclination of the phase of the cross-spectrum detected by the cross-spectrum phase detector with respect to a frequency," as recited in Applicant's Claim 54.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of Claim 54 under 35 U.S.C. § 103(a) as being unpatentable over Lazzari et al. in view of Aoki et al.

In view of the foregoing amendments and remarks, Applicant respectfully submits that Claims 21, 29, 36, 44, 52, 54, 56, and 57 are allowable. Claims 22-28, 30-35, 37-43, 45-51, 53, and 55 depend upon Claims 21, 29, 36, 44, 52, and 54, and are therefore allowable for at least the reasons that Claims 21, 29, 36, 44, 52, and 54 are allowable.

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In view of the foregoing remarks, Applicant respectfully submits that this application is in condition for allowance. Favorable consideration and prompt allowance are solicited.

The Commissioner is authorized to charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1353.

Respectfully submitted,

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